

REMARKS/ARGUMENTS

Claims

Claims 1-10 remain pending in this application. No claim amendments have been made. No new matter has been added.

Claim Rejections under 35 U.S.C. §103

Claims 1-2, 6-7, 9 and 10 are rejected under 35 U.S.C. §103(a) as being unpatentable over Akiyama et al., U.S. Patent No. 6,795,380 in view of Matsumoto, JP 2001-255254.

Applicants request reconsideration of the rejection for the foregoing reasons.

The present invention is directed to a recording head for generating an optical near field and thermo-magnetically recording information on a recording medium, as set forth in claim 1 and to an information recording/reading apparatus for generating an optical near field and thermo-magnetically recording/reading information on a recording medium, as set forth in claim 9. In each of independent claims 1 and 9, the claimed combination includes a light source, magnetic pole for applying a magnetic field to the recording medium, and a diffuser that generates an optical near field when the diffuser receives light from the light source. Also, the diffuser is claimed to be in contact with the magnetic pole and a face from which light from the light source irradiates is claimed to be substantially perpendicular to the recording medium. Further, in claim 9, magnetic flux detection means is claimed that detects a magnetic flux of the recording medium.

Applicants explain the significance of the diffuser being claimed to be in contact with the magnetic pole and, with respect to a face from which light from the light source irradiates,

to be substantially perpendicular to the recording medium with reference to Figs. 5A-5D. In particular, the result shown in Fig. 5B is a result for the case in which the light receiving face of the diffuser is arranged perpendicularly to the y-axis (also perpendicularly to the magnetic recording layer), as shown in Fig. 5D. As shown in Fig. 5B, the ratio of the peak intensity of an optical near field to the intensity of incident light is 264 times and in the case of the perpendicular arrangement, as an intense optical near field as 1.5 times can be generated. See page 26, lines 5-9 of the specification. Further, Applicants explain that when the diffuser is in contact with the magnetic pole, this contact enables heat dissipation, in order to overcome the problem recognized by Applicants with the metal diffuser of the prior art that generates an optical near field and that is exposed at the bottom of the recording slider and has a structure where the metal diffuser is in contact with only a dielectric, the thermal conductivity of which is relatively low. See page 4, lines 10 - 20 of the specification. Therefore, the claimed arrangement of the diffuser and magnetic pole overcomes a problem of the prior art which occurs when a part of the recording energy is absorbed by the metal diffuser, the temperature rapidly rises and the metal diffuser becomes damaged. See page 6, lines 9-11 of the specification.

Akiyama discloses an optically-assisted magnetic recording head and magnetic recording apparatus which heats a magnetic recording medium by light irradiation in order to magnetically record data. Disclosed is a transparent dielectric block 7 that is in contact with a magnetic recording head that functions as a bowtie type evanescent light probe formed by a pair of oppositely disposed members 1A and 1B. See col. 7, line 67 - col. 8, line 2 of the reference. Accordingly, the diffuser and magnetic pole of Akiyama are not in contact in the

manner as claimed by Applicants. Further, the face from which light from the light source irradiates in the evanescent probe or diffuser of Akiyama is parallel, not substantially perpendicular to the recording medium as claimed by Applicants.

Applicants discuss in the specification that the main magnetic pole and the diffuser are separate, as shown in Fig. 1. The comparable elements in Akiyama are not separate, but rather are combined. See page 9, lines 17-21 of the specification which discusses that the magnetic pole of the present invention is made of permalloy and the diffuser of Au, for example. On page 13, lines 23-27 of the specification, Applicants also discuss that "it is realistically difficult to use the main magnetic pole 104 for the diffuser 107." Therefore, Akiyama is deficient in disclosing the magnetic pole and diffuser of the present invention.

The deficiencies in Akiyama are recognized in the Office Action, however reliance on Matsumoto to overcome these deficiencies is misplaced. Matsumoto is directed to an optical recording system that does not include a magnetic pole. Therefore, the claimed arrangement of the magnetic pole and diffuser of the independent claims is not shown or suggested by the combination of Akiyama and Matsumoto.

Allowable Subject Matter

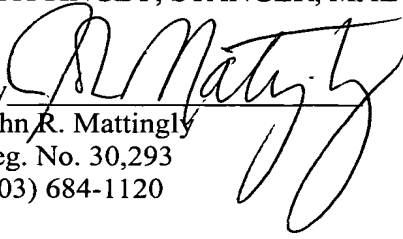
Claims 3-5 and 8 are objected to as being dependent upon a rejected base claim but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

CONCLUSION

In view of the foregoing, Applicant respectfully requests that a timely Notice of Allowance be issued in this case.

Respectfully submitted,

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